Health Departments And Seafood Conservation

By A. L. CHAPMAN, M.D.

FOR at least 50 years health departments have worked assiduously to provide sanitary water supplies. They have cooperated with the Food and Drug Administration to make foods safer to eat. As a result of these efforts waterborne epidemics rarely occur and food poisoning outbreaks usually are self-limited and localized.

Health departments have recognized the fact that the quantity and the availability of water is as important to the health of the Nation as the bacterial and chemical quality of water. The time would now seem propitious for health departments to evince the same degree of interest in the quantity and the availability of food.

Some interesting facts bear on this problem. Only about one-third of the world's estimated population of 2,200,000,000 people are well fed. The rest are either starving or they are living on substandard diets.

One of the principal reasons for this wholesale and worldwide dietary inadequacy is the fact that only a small portion of the earth's surface can be cultivated. Four-fifths of the earth's surface is covered with water. The other one-fifth is above the sea. Less than 12 percent of this land area of 36,800,000,000 acres is capable of producing food. A large part of the 88 percent of land not under cultivation is barren and few of these billions of barren acres ever can be made economically productive.

The Untapped Foodbasket

For many centuries the fertile elements of the soil have washed relentlessly down to the sea. Uncontrolled erosion caused a loss of top soil in which was mingled important nutritive elements. But the land's loss has been the ocean's gain. Even as the land became poorer, the oceans became richer. Nitrogenous substances and nutritionally valuable minerals leached from the soil became the fertilizer of the sea and supported luxuriant marine vegetation, generally food for the animal life of the sea.

Plankton pervade the ocean waters. They are to the sea what wheat and corn are to the land. They constitute the nutritional base of marine animal life. The waters of the earth contain billions of tons of planktonic materials that never have been harvested nor have they ever been used on any large scale to serve man's purpose.

By increasing the production and stimulating a higher consumption of fish and shellfish, at least indirectly we can tap that prolific foodbasket, which is the sea. The people of the United States are among the lowest per capita fish consumers in the world. This characteristic is not irreversible. Probably one of the best ways to reverse it would be to modernize shellfish production methods, more particularly the methods of oyster production.

Oyster Production

In one eastern seaboard State where a laissez faire attitude toward oyster production long existed, the annual oyster production dropped from 15 million bushels in 1883 to its present level of slightly more than 2 million bushels.

This drop in production in the oyster catch in one State represents a protein loss equivalent to 130,000 Hereford cattle. If this State had instituted a leasing policy in 1900, it is estimated that the current annual oyster yield, instead of being in the neighborhood of 2 million bushels, would approximate 20 million bushels. In several adjoining States the drop in oyster production, since the latter part of the 19th century, has shown a similar steady downward trend.

The reasons for this continuing decline in oyster production are known to marine biolo-

Dr. Chapman is regional medical director of the Public Health Service, Department of Health, Education, and Welfare, Region II, New York City.

gists and to enlightened oystermen. Unfortunately, the nutritional importance of oysters and other shellfish has not been publicized sufficiently nor well enough to motivate health agencies to give sturdy support to the handful of scientists and conservationists who unsuccessfully have been trying to reverse the downward trend in shellfish production for many years. Oyster production in the North Atlantic States has dropped to negligible proportions for many reasons. Among the more important reasons are uncontrolled harvesting, failure to adopt scientific methods of oyster culturing, and increasing amounts of water pollution.

The oyster is a nutritious article of diet. It compares favorably with milk, poultry, eggs, and meat in its content of essential amino acids. Oysters, like milk, contain an abundance of calcium. They are iodine rich. They are excellent sources of thiamin and riboflavin. Local health officers in coastline counties often comment on the fact that no pellagra or beriberi is found among the members of families who have a pile of oyster shells in front of their shacks. Some nutritionists rank oysters and clams in the category of milk as an exceptionally well-balanced food. And oysters are very digestible.

Many fallacies have crept into nutritional lore about shellfish. There is a misconception that oysters are unsafe to eat except during months that have an "R" in them. This is of course untrue since oysters, properly grown and properly prepared, may be eaten safely during any month that they are available. The reason for the decline in their use during the summer months is that these are the months during which oysters spawn. It is the season during which they are most likely to be thin, not so succulent, and therefore less profitable to harvest and vend. Also, there is likely to be more spoilage in the summer.

Even unscientific oyster farming is more profitable than dirt farming. Under controlled, ideal conditions, 4,000 bushels of oysters can be grown on a 4 acre oyster "farm" in 3 years, representing a yield of approximately 32,000 pounds of nutritious high-protein food. In sharp contrast, 4 acres of "run-of-the-mill" grazing land will support only one steer which yields about 600 pounds of dressed beef. It must be remembered, too, that steers must be fed and watered if they are to grow and fatten; oysters feed and water themselves.

An oysterman who cultivates an oyster farm in accordance with sound principles of farm management can make more money than a dirt farmer. The cultivation of a good acre of oysters can be 10 times as profitable as the cultivation of an acre of potatoes and 17 times as profitable as the cultivation of an acre of wheat.

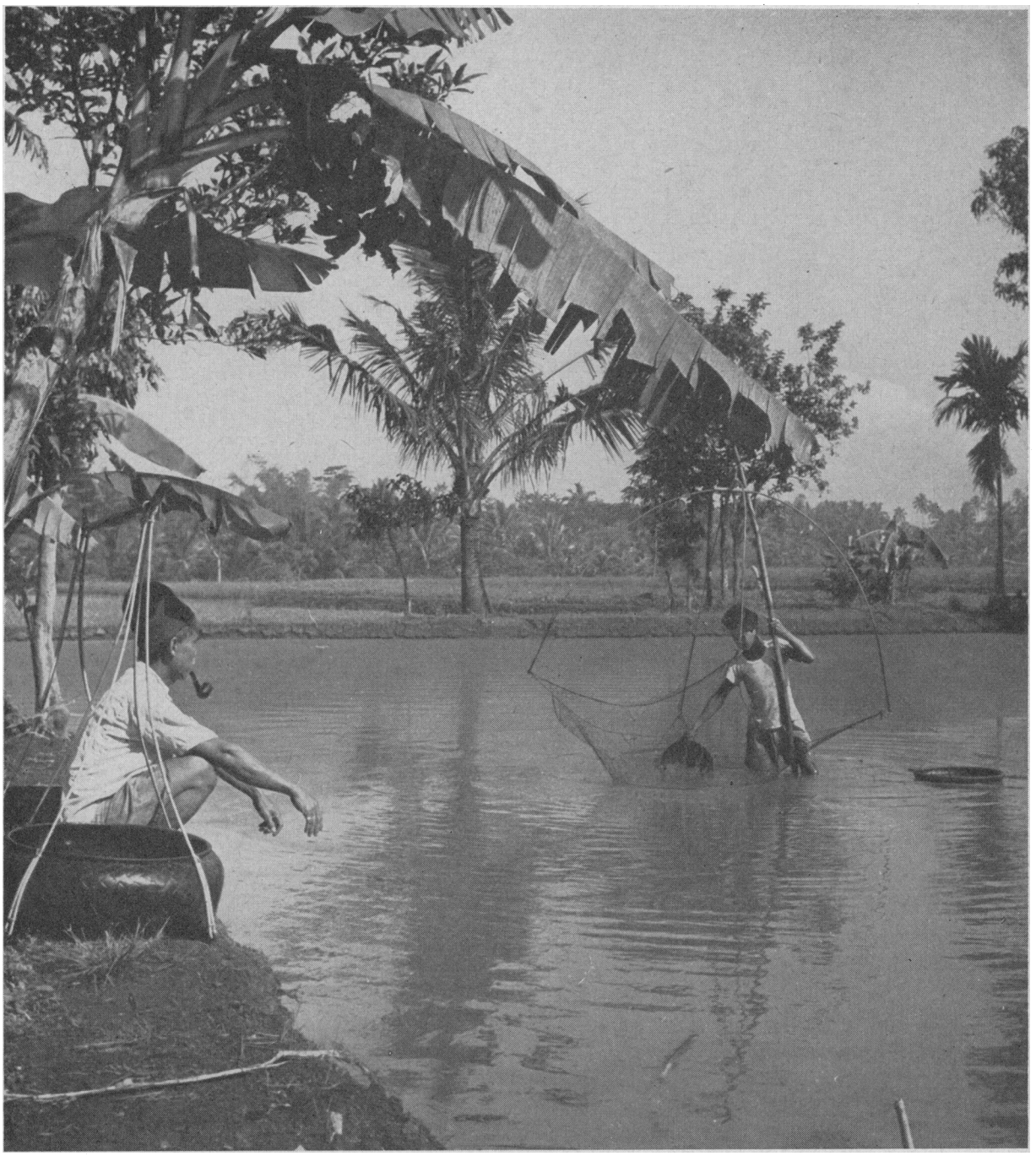
"Aquaculture"

In recent years, many dirt farmers, some 250,000 of them, have sensed the importance of fish and have constructed farm ponds in which fish are grown for food as well as for sport. The average yield of such ponds is about 200 pounds of fish per acre each year and well fertilized ponds can double that yield.

Congress recently recognized the importance of these ponds by providing special income tax exemptions for farmers who build them. It has been estimated that as many as 1,500,000 more ponds of this type could be wisely utilized.

In one of the coastal counties of a southern State, the maritime equivalent of a 4–H club has been organized among the students of a high school whose principal grasped the significance of seafood as a future source of food. A student's Marine Conservation Society was formed. The boys come from hardy waterman stock and rapidly are becoming seasoned watermen themselves. As an initial venture they planted two oyster beds with 8,000 bushels of seed oysters, which they plan to cultivate for fun, for experience, and for profit. Under the supervision of a dedicated marine conservationist, these boys will have an opportunity to learn scientific oyster farming sans the many superstitions that have burdened previous generations of watermen.

Until the turn of the century, oysters were able to hold their own against the destructive forces of nature. They managed to survive the cold of winter and the inroads made upon them by their natural enemies. It was only when man, unaware of the importance of conservation, began to denude the oyster beds, that the biological balance was tilted against the oyster, and once-famed oyster beds passed out of ex-



Inland fish culture in Java, Indonesia. The Javanese started raising fish for food about 1,200 or 1,400 years ago. United Nations photograph from "The Story of FAO."

istence except in the memories of a few old-timers.

Enough scientific research has been done to permit the rehabilitation of these barren oyster beds if oystermen would take the advice of conservationists. Recent developments in the science of "aquaculture" makes it possible to culture oysters in such a way that "seed" suppliers do not have to depend upon the hit-or-miss methods of the past.

By the scientific analysis of such growing factors as salinity, turbidity, currents, and tem-

perature, the areas best suited to growing seed oysters can be selected. The seed oysters can then be planted in other selected areas where they will grow more rapidly to maturity. By skillfully dividing oyster farming into two distinct stages, the growing of seed oysters in some areas and the maturing of them in other areas, oyster farmers no longer need depend entirely upon chance to obtain good yields.

Important recent experiments at several biological laboratories along the eastern seacoast have demonstrated that seed oysters, which grow prolifically in warm southern coastal waters, can be transplanted successfully to cooler waters further north. There they can grow normally to toothsome maturity freed from the marine jungle competition into which they are born.

Health Department Interest

With many pressing public health problems on their way to solution, with human life expectancy approaching the 70-year mark, and with the world population steadily increasing, it is time to think much more seriously about the need to increase the world's and the Nation's supply of food. The functions of health agencies are changing rapidly as the character of the health problems they face continue to change. In addition, then, to supervising the sanitary quality of water and food, would health departments be remiss if they became more actively interested in efforts that are being made to conserve and to expand the Nation's food supplies?

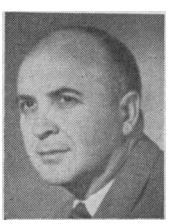
Can increased health educational efforts help popularize the wider use of fish and shellfish produced under sanitary conditions as dietary staples and thereby increase the demand for these products?

Can health departments help to increase the production of shellfish by encouraging marine conservationists to introduce more modern and more scientific methods of oyster culture?

Inevitably, the world's current population growth will generate the pressures needed to bring about an increase in our supplies of food.

Would it not be more in keeping with the leadership role of health departments to anticipate these pressures and attempt to moderate and perhaps guide them by participating actively in the rapidly developing though often lagging food conservation program?

PHS Staff Announcements



Assistant Surgeon General William H. Sebrell, Jr., director of the National Institutes of Health since 1950, retired on August 1, 1955, after 30 years of active duty as a commissioned officer of the Public Health Service. He has accepted appointment as research consultant for the American Cancer Society and will direct the society's research grants program.

Dr. Sebrell has earned worldwide recognition as a medical scientist, particularly through his studies on the B vitamins. In the 1920's, he was a member of the Public Health Service team that established the dietary origin, prevention, and treatment of pellagra. He discovered the causes and cure of ariboflavinosis and has made important contributions to research in the dietary causes and treatment of liver diseases, the effect of pantothenic acid deficiency on the adrenal glands, nutritional effects of sulfa drugs, and the cause and treatment of blood abnormalities.

Dr. James A. Shannon, formerly associate director of NIH, has succeeded Dr. Sebrell. Dr. Shannon is also chairman of the Public Health Service's Technical Committee on Poliomyelitis Vaccine. A commissioned officer of the Service since 1949, he was associate director in charge of research at the National Heart Institute prior to his becoming associate director of the Institutes in 1952. Dr. Shannon was awarded the Medal of Merit for his work in World War II malaria control programs.

Dr. Shannon received his medical degree from New York University in 1929. He also received a doctorate in philosophy from the same university in 1935. After teaching at the university, he became director of research at Goldwater Memorial Hospital in 1942. From 1946 to 1949 he was director of the Squibb Institute for Medical Research.